

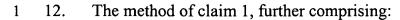
CLAIMS

What is claimed is:

- 1 1. A method for automated management of hydrocarbon gathering, the
- 2 method comprising:
- 3 collecting data from a plurality of automated measurement and control
- 4 devices positioned in a hydrocarbon gathering system;
- 5 comparing the collected data with data stored in a database; and
- 6 using the data comparison to automatically schedule a test of at least one of
- 7 the plurality of automated measurement and control devices.
- 1 2. The method of claim 1, wherein the data stored in the database is
- 2 automatically updated with the collected data.
- 1 3. The method of claim 1, wherein the stored data comprises contractual
- 2 provisions contained in contracts between a hydrocarbon gathering company and
- 3 another entity.
- 1 4. The method of claim 3, wherein the contractual provisions comprise a
- 2 testing frequency for the automated measurement and control devices.
- 1 5. The method of claim 1, wherein the management data comprises test
- 2 scheduling data defined by a hydrocarbon gathering company.
- 1 6. The method of claim 1, wherein the plurality of measurement and control
- 2 devices comprises electronic flow meters.



- 1 7. The method of claim 1, wherein the plurality of automated measurement
- 2 and control devices comprises programmable logic controllers.
- 1 8. The method of claim 1, wherein the plurality of automated measurement
- 2 and control devices comprises remote terminal units.
- 1 9. The method of claim 1, wherein the plurality of automated measurement
- 2 and control devices comprises automated gas composition analysis devices.
- 1 10. The method of claim 1, wherein using the data comparison further
- 2 comprises:
- notifying a field technician of a required test for at least one of the plurality
- 4 of automated measurement and control devices; and
- automatically notifying a withess of the test after the field technician has
- 6 selected a test date.
- 1 11. The method of claim 1, wherein using the data comparison further
- 2 comprises:
- analyzing the collected data to determine a volume of a flow of
- 4 hydrocarbons through at least one of the plurality of automated measurement and
- 5 control devices;
- 6 comparing the volume of the hydrocarbon flow to contractual provisions
- 7 stored in the database; and
- automatically scheduling meter tests according to the stored contractual
- 9 provisions.

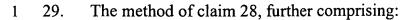


- 2 automatically updating the database after testing of at/least one of the
- 3 plurality of automated measurement and control devices.
- 1 13. The method of claim 11, wherein selected field personnel are automatically
- 2 notified of the automatically scheduled tests.
- 1 14. The method of claim 13, wherein the automatic notification is transmitted
- 2 electronically.
- 1 15. The method of claim 11, wherein a witness is automatically notified of the
- 2 automatically scheduled tests.
- 1 16. The method of claim 15, wherein the automatic notification is transmitted
- 2 electronically.
- 1 17. The method of claim 1, further comprising:
- testing at least one of the plurality of automated measurement and control
- 3 devices;
- 4 automatically comparing test data with master testing data stored in the
- 5 database; and
- 6 generating an alarm if a variance between the new testing data and the
- 7 master testing data exceeds a selected threshold.



- 18. The method of claim 1, further comprising: 1
- 2 automatically measuring electrical current flow in at least one cathodic
- protection system positioned in the hydrocarbon gathering system; and 3
- generating an alarm if the automatically measured electrical current flow 4
- exceeds a selected threshold. 5
- 1 19. The method of claim 1, wherein a computer system connected to the
- database automatically generates an alarm when a selected event is detected. 2
- 1 20. The method of claim 19, wherein the selected event comprises detection of
- non-conforming test data collected from at least one of the plurality of automated 2
- 3 measurement and control devices.
- The method of claim 19, wherein the selected event comprises detection of 1 21.
- a failure of at least one of the plurality of automated measurement and control 2
- 3 devices.
- The method of claim 19, wherein the selected event comprises detection of 1 22.
- 2 a system imbalance beyond a selected threshold.
- 23. The method of claim 19, wherein the selected event comprises detection of 1
- a change in natural gas composition beyond a selected threshold. 2

- 1 24. A method for automated management of hydrocarbon gáthering, the
- 2 method comprising:
- 3 collecting well test data from at least one of a plurality of producing wells
- 4 in a hydrocarbon gathering system;
- 5 using the well test data to automatically reallocate hydrocarbon production
- 6 to at least one of the plurality of producing wells,
- 1 25. The method of claim 24, wherein the well test data is used to automatically
- 2 reallocate production costs to at least one of the plurality of producing wells.
- 1 26. The method of claim 24, wherein the well test data is used to automatically
- 2 populate regulatory forms.
- 1 27. The method of claim 24, wherein the well test data is automatically
- 2 reported to selected users.
- 1 28. A method for automated management of hydrocarbon gathering, the
- 2 method comprising:
- 3 calculating a system balance for a selected balance envelope;
- 4 collecting/hydrocarbon sample test data from at least one of a plurality of
- 5 automated measurement and control devices positioned in a hydrocarbon
- 6 gathering system; and
- 7 using the hydrocarbon sample test data to automatically recalculate the
- 8 system balance.



- 2 using the recalculated system balance to mix hydrocarbon/products from at
- least two gathering pipelines to produce a desired hydrocarbon flow composition.
- 1 30. The method of claim 29, wherein the desired hydrogarbon flow
- 2 composition is selected to minimize hydrocarbon processing costs.
- 1 31. The method of claim 28, wherein the plurality of measurement and control
- 2 devices comprises electronic flow meters.
- 1 32. The method of claim 28, wherein the plurality of automated measurement
- 2 and control devices comprises programmable logic controllers.
- 1 33. The method of claim 28, wherein the plurality of automated measurement
- 2 and control devices comprises remote/terminal-units.
- 1 34. The method of claim 28, wherein the plurality of automated measurement
- 2 and control devices comprises automated gas composition analysis devices.
- 1 35. The method of claim 28, wherein a database is automatically updated after
- 2 recalculation of the system/balance.
- 1 36. The method of claim 28, wherein the system balance comprises a volume
- 2 balance.
- 1 37. The method of claim 28, wherein the system balance comprises an energy
- 2 balance.



- 1 38. The method of claim 28, wherein the system balance comprises a natural
- 2 gas component balance.
- 1 39. The method of claim 28, wherein the balance envelope comprises a
- 2 combination of user defined selected ones of the plurality of automated
- 3 measurement and control devices.
- 1 40. A method for automated management of hydrocarbon gathering, the
- 2 method comprising:
- 3 calculating a system balance for a selected balance envelope;
- 4 testing at least one of a plurality of automated measurement and control
- 5 devices positioned in a hydrocarbon gathering system; and
- 6 using the test data to automatically recalculate the system balance.
- 1 41. The method of claim 40, wherein the plurality of measurement and control
- 2 devices comprises electronic flow meters.
- 1 42. The method of claim 40, wherein the plurality of automated measurement.
- 2 and control devices comprises programmable logic controllers.
- 1 43. The method of claim 40, wherein the plurality of automated measurement
- 2 and control devices comprises remote terminal units.
- 1 44. The method of claim 40, wherein the plurality of automated measurement
- 2 and control devices comprises automated gas composition analysis devices.

- 1 45. A method for automated management of hydrocarbon gathering, the
- 2 method comprising:
- 3 calculating a composition of hydrocarbon flow in a hydrocarbon gathering
- 4 system;
- 5 collecting hydrocarbon sample test data from a plurality of automated
- 6 measurement and control devices positioned in the hydrocarbon gathering system;
- 7 and
- 8 using the hydrocarbon sample test data to automatically recalculate the
- 9 composition of hydrocarbon flow in the hydrocarbon gathering system.
- 1 46. The method of claim 45, wherein the plurality of measurement and control
- 2 devices comprises electronic flow meters
- 1 47. The method of claim 45, wherein the plurality of automated measurement
- 2 and control devices comprises programmable logic controllers.
- 1 48. The method of claim 45, wherein the plurality of automated measurement
- 2 and control devices comprises remote terminal units.
- 1 49. The method of claim 45, wherein the plurality of automated measurement
- 2 and control devices comprises automated gas composition analysis devices.
- 1 50. The method of claim 45, further comprising:
- automatically updating a database after recalculation of the hydrocarbon
- 3 flow composition.

- 1 51. The method of claim 1, wherein the collected data and data stored in the
- 2 database are used to model pipeline hydraulics.
- 1 52. The method of claim 1, further comprising:
- 2 using the collected data and data stored in the database to automatically
- 3 generate a report for a selected unit of a hydrocarbon gathering system.
- 1 53. The method of claim 1, wherein the collected data and data stored in the
- 2 database are used to evaluate reservoir production.